PATENT ABSTRACTS OF JAPAN

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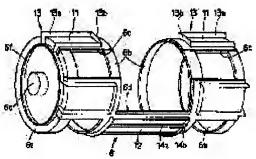
(54) AIR-CONDITIONING DEVICE

(57)Abstract:
PROBLEM TO BE SOLVED: To provide an air-conditioning device which has good sealing effect and allows reduction of the rotary door operating force.
SOLUTION: On a disc part 6a of a rotary door 6, a projection 6f is installed upright as oriented in the rotating direction of the rotary door 6 and is fitted loosely in a groove provided at a case. This configuration can shut off the stream of the air willing to flow into the opening from inside the rotary door 6 in the axial direction of its rotary shaft 6e, so that a lateral seal part 13b installed in orientation in the rotating direction can be lessened compared with a conventional rotary door, and the operating force to rotate the rotary door 6 can be reduced.



CLAIMS

[Claim(s)]
[Claim 1]Have the following and an opening is formed in an opening of said rotary door of said case, and a position which counters, In an air-conditioner which adjusts air relieving volume from an opening of said case by rotating said door rotary focusing on said rotating shaft, A height is set up along a moving direction of said rotary door by the end face of said rotation side of said rotary door, A slot into which said height fits loosely is formed in said end face where this height is set up, and a wall surface of a case which counters, An air-conditioner, wherein said sealing member is provided in said rotary door so that an end of said flexible part may join to said height and the circumference of an opening of said case which should be blockaded may be surrounded by said height and said flexible part.
A case where it has an air duct inside.
A rotating shaft supported by this case enabling free rotation.
A rotary door which has a rotation side of section approximate circle arc shape where an opening is formed, is connected with said rotating shaft and arranged inside said case.
A sealing member which carries out the seal of between said rotary door and wall surfaces of said case by making a wall surface of said case contact, being provided in this rotary door, having a flexible part extended towards a wall surface of a case where a tip counters, and sagging this flexible part.

[Claim 2]Two or more openings are formed in shaft orientations of said rotating shaft of said rotary door at a wall surface of said case, It has the shape where said two or more rotation sides which have a section of approximate circle arc shape where sizes in which said rotary doors are paths differ were accumulated, The air-conditioner according to claim 1, wherein said sealing member is provided so that said height may be formed in a both-ends side of these rotation sides, respectively and an end of said flexible member may join to these heights.
[Claim 3]In an air-conditioner which adjusts air relieving volume from an opening of said case by having the following and rotating said door rotary focusing on said rotating shaft, An air-conditioner with which said flexible part is provided in at least one end face of the end face of said rotation side of said rotary door, and is characterized by being joined to said rotating shaft so that it may become an abbreviated perpendicular in a moving direction of said rotary door.
A case where have an air duct inside and an opening is formed.
A rotating shaft supported by this case enabling free rotation.
A rotary door which has a rotation side of section approximate circle arc shape where an opening is formed, is connected with said rotating shaft and arranged inside said case.
A sealing member which carries out the seal of between said rotary door and the circumferences of

an opening of said case by making the circumference of an opening of said case contact, being provided in this rotary door, having a flexible part extended towards a wall surface of a case where a tip counters, and sagging this flexible part.

[Claim 4]It is an air-conditioner of any one statement among claims 1 thru/or 3, wherein it is provided in said end face, and a portion of said flexible part by which an end is joined to said height is provided so that it may become an abbreviated perpendicular in a moving direction of said rotary door.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention]This invention relates to the air-conditioner for vehicles which adjusts the air relieving volume from the opening of a case by rotating the door rotary of a cylindrical shape focusing on a rotating shaft so that a rotation side may meet the opening formed in the case.
[0002]
[Description of the Prior Art]In the air-conditioner which rotates the above door rotaries and adjusts the relieving volume from the opening of a case. Usually, the sealing member which consists of elastic members has adhered to the rotation side of a rotary door, and the wind leakage from between a rotary door and cases is prevented by making this sealing member contact the verge-of-opening part of a case.
[0003]Thus, about the air-conditioner which provided the sealing member in the rotary door, this invention persons applied as Japanese Patent Application No. No. 193385 [seven to] previously. In Japanese Patent Application No. No. 193385 [seven to], the rotary door 50 as shown in a figure as a rotary door allotted to an air-conditioner is mentioned. The sealing member 51 which consists of rubbers has adhered to the rotation side 50a of the rotary door 50. The sealing member 51 is mostly extended to the rotation side 50a of the rotary door 50 perpendicularly (direction which goes to the wall surface of a case when the rotary door 50 is allocated by the case (not shown)), and has the flexible part 52 which has flexibility.
[0004]This flexible part 52 is formed in the approximately rectangle, and has a portion (it is hereafter considered as the width seal part 52a) provided in the shaft orientations of the rotating shaft 50b, and a portion (it is hereafter considered as the length seal part 52b) provided along the moving direction of the rotary door 50. The rotary door 50 is allocated in the case so that the tip of the flexible part 52 may contact the wall surface of a case and it may be in the state where it bent. By making the wall surface of a case contact, where the flexible part 52 is sagged, the seal of between the rotary door 50 and the wall surface of a case is carried out.

[0005]
[Problem(s) to be Solved by the Invention]However, when this invention persons inquired wholeheartedly, it became clear that there is a problem it is described below that is a rotary door as shown in said Japanese Patent Application No. No. 193385 [seven to]. Since the width seal part 52a is formed among the flexible parts 52 almost in parallel with the rotating shaft 50b of the rotary door 50, the tip of the width seal part 52a bends in one way at the time of rotation of the rotary door 50. Therefore, an operating physical force required at the time of rotation of the rotary door 50 is comparatively small. On the other hand, since the length seal part 52b is formed along

the moving direction of the rotary door 50, the direction by which the tip of the length seal part 52b is bent at the time of rotation of the rotary door 50 will be irregular to the moving direction of the rotary door 50 at right and left. Therefore, while the big operating physical force at the time of rotation of the rotary door 50 is needed, there is a problem that sealing nature will fall.

[0006]Then, in the air-conditioner which carries out the seal of between a rotary door and cases by making the wall surface of a case contact, this invention being made in light of the above-mentioned problems, and sagging the tip of a flexible part, It aims at the operating physical force of a rotary door making it decrease, securing sealing nature.

[0007]

[Means for Solving the Problem]Since a height (6f) formed in the end face (6a) has structure which fits loosely into a slot (1c) formed in a case (1) according to the invention according to claim 1 in order to attain the above-mentioned purpose, Air which is going to flow into an opening (8, 9, 10) of a case which should be blockaded along shaft orientations of a rotating shaft (6e) tends to pass through a gap of a height and a slot. However, since this air is passed being crooked along a height and a slot, a draft resistance of a gap of a height and a slot becomes large, and a flow of air which is going to flow into an opening of a case which should be blockaded along shaft orientations of a rotating shaft can be interrupted substantially. Therefore, a flow of air which is going to flow into an opening of a case which should be blockaded along shaft orientations of a rotating shaft interrupted by flexible part (length seal part in a paragraph of conventional technology (52b)) provided along a moving direction of a rotary door (6) can be interrupted conventionally. Therefore, the length of a flexible part (13b) provided along a moving direction which could lose a portion provided in the end face side among flexible parts provided along a moving direction of a rotary door, and caused operating-physical-force increase of a rotary door can be shortened. An operating physical force which is needed when rotating a rotary door can be reduced. Since a height has fitted loosely into a slot, an operating physical force which is needed when rotating a rotary door is not increased.

[0008]An end of a flexible part (13a) is joined to a height, and since the circumference of an opening of a case which should be blockaded by a flexible part (13) and height is surrounded, sealing nature between a rotary door and a wall surface of a case can fully be maintained. By considering it as shape where several rotation sides where sizes of a path differ shape of a rotary door (15) were accumulated according to the invention of claim 2, a both-ends side (15a.) of each rotation side of a rotary door allotted to an inside of a case (1) where two or more openings (8, 9, 10) are formed in shaft orientations of a rotating shaft (15h) at a wall surface A flow of air which is going to flow into an opening of a case which should be blockaded at the both-ends side of each rotation side along shaft orientations of a rotating shaft can be interrupted by forming a height (15f, 15g) in 15c, and making it fit loosely into a slot of a case. Therefore, conventionally, all length seal parts (52b) provided in a moving direction of a rotary door can be lost, and an operating physical force which is needed when rotating a rotary door can be reduced further.

[0009]According to the invention of claim 3, it can interrupt by a flexible part (21a) in which a flow of air which is going to flow into an opening (8, 9, 10) of a case (1) which should be blockaded from the end face (6a) side along shaft orientations of a rotating shaft (6e) of a rotary door (6) was provided in the end face. Since a flexible part provided in this end face is provided so that it may become an abbreviated perpendicular in a moving direction of a rotary door, a direction which bends when a rotary door rotates turns into only one way. Therefore, an operating physical force which is needed when rotating a rotary door can be reduced, and the same effect as claim 1 can be acquired. Even if it does not have the structure into which a height of a rotary door and a slot of a case fitted loosely, the same effect as claim 1 can be acquired, and compared with an invention of claim 1, it can be considered as a briefer structure.

[0010]a portion by which according to the invention of claim 4 it is provided in the end face (6a) of

a flexible part (13), and an end is joined to a height (6f) -- a moving direction of a rotary door (6) -- abbreviated -- since it is provided so that it may become vertical, a direction by which this portion is bent at the time of rotation of a rotary door turns into only one way. Therefore, while fully being able to maintain sealing nature between the end face of a rotary door, and a wall surface of a case (1), an operating physical force needed when a rotary door makes it rotate can be reduced.

[0011]

[Embodiment of the Invention]Next, this invention is explained using drawing 1 thru/or drawing 9 about the 1st example applied as an air-conditioner for vehicles. The fan 2 is allocated in the air upstream part of the case 1 where it has an air duct inside. This fan 2 is driven by the driving means which is not illustrated. The admission port 3 for inhaling air is formed in the upstream (drawing 1 space near side) part rather than the fan 2 of the case 1. And the cooler unit which stored the compressor which is not illustrated, the condenser, and the evaporator which constitutes a well-known refrigerating cycle with a decompressing means is connected to this admission port 3.

[0012]The heater core 4 which heats the air to pass is formed in the air downstream part rather than the fan 2 in in the case 1. It rotates in the air upstream part of the heater core 4 focusing on the shaft 5a, and the air mix door 5 which adjusts the quantity of the air which passes the heater core 4 is formed in it. In the air downstream part of the heater core 4 of the case 1. The section approximate circle-shaped portions 1a and 1a project, respectively, and are formed in the drawing 1 space near side and the back side. The rotating shaft 6e of the door rotary 6 later mentioned to the lobe 1b formed in this portion 1a fits in loosely, and the door rotary 6 is supported to the case 1 by being supported enabling free rotation among the above 1a and 1a, enabling free rotation.

[0013]While two or more ducts 7-10 stated to the shaft orientations of the rotary door 6 allotted to this portion 1a below are connected, the openings 7a-10a used as the air lowest style side part of these ducts 7-10 are formed in this portion 1a. The side face ducts 7 and 7 which lead air conditioning to the side-glasses side part or side glasses of the upper half of the body of a driver's seat crew member and a passenger seat crew member, and the foot ducts 8 and 8 which lead air conditioning to a driver's seat crew member step and a passenger seat crew member step are connected to the above-mentioned portion 1a.

[0014]The center face duct 9 which leads air conditioning to the upper-half-of-the-body center section of a driver's seat crew member and the passenger seat crew member, and the defroster duct 10 which leads air conditioning to a windshield inner surface are formed in the air downstream end of the case 1 (refer to drawing 3). And the air, as for, the exhaust air mix was carried out by the above-mentioned air mix door 5, As it is led in the door rotary 6 and each openings 7a-10a (refer to drawing 6 - drawing 8) which this door rotary 6 mentions later are met, it rotates focusing on the above-mentioned rotating shaft 6e, and the air relieving volume from each above-mentioned ducts 7-10 is adjusted by the stopped position.

[0015]Next, the shape of the above-mentioned door rotary 6 is explained. The two disk parts 6a (end face in a claim) to which the door rotary 6 has a ring shaped part in a rim as shown in drawing 1, The connecting plate 6c of four sheets (two of them hide and not shown [sheets] by drawing 4) which connects the two ring parts 6b formed in ring shape, and the above-mentioned disk parts 6a and the ring parts 6b, 6 d of connecting plates of one sheet which connect the above-mentioned ring parts 6b and 6b, and the annular lobe 6f set up by the disk part 6a so that it may be extended towards the wall surface of the case 1, when the rotary door 6 is allocated by the case 1, respectively, Integral moulding is carried out by resin by the predetermined mold which is not illustrated, and it has the shape of a section approximate circle arc-shaped cylindrical shape as a whole with it. The two cylindrical rotating shafts 6e (one of them hides and not shown [**]) projected to the disk part 6a are formed in the central part of the disk parts 6a and 6a.

[0016]If the door rotary 6 rotates focusing on the rotating shaft 6e, the rotary door 6 will be arranged inside the case 1 so that the part between the ring shaped part of the disk part 6a and the ring part 6b may counter with the above-mentioned ducts 7 and 8 and the part between the ring parts 6b and 6b may counter with the above-mentioned ducts 9 and 10. The portion in which the connecting plate 6c is not formed among the parts between the ring shaped part of the disk part 6a, and the ring part 6b, And the portion in which 6 d of connecting plates are not provided among the parts between the ring parts 6b and 6b is in the state where the inside and the exterior of the rotary door were open for free passage, and serves as an opening of the rotary door in a claim.

[0017]The slot 1c which is a slot is formed in the lobe 6f of the rotary door 6, and the wall surface of the case 1 which counters, the lobe 6f of the rotary door 6 fitted in loosely, and the shaped bag is accomplished. By the way, the sealing members (specifically rubber) 11 and 12 which consist of elastic bodies have adhered to the disk part 6a and each each connecting plates [6c and 6d] upper surface (it specifically pastes up with adhesives). The flexible parts 12 and 13 extended in the direction (direction extended to the wall surface side of the case 1 which counters when the door rotary 6 is allocated in the case 1) which becomes vertical to the connecting plates 6c and 6d which pasted up self are formed in these sealing members 11 and 12, respectively. These flexible parts 12 and 13 to the width in a perpendicular direction The connecting plate 6c, The width in a direction (direction which the door rotary 6 rotates after allocating the door rotary 6 in the case 1) level to a 6-d field is short enough, and if the door rotary 6 is allocated in the case 1, it will contact in the state (the drawing 4 inner substance line shows) where it bent on the wall surface of the case 1.

[0018]The flexible part 12 provided in the disk part 6a and the connecting plate 6c has a portion (it is hereafter considered as the width seal part 13a) provided in the moving direction of the rotary door 6 at an abbreviated perpendicular, and a portion (it is hereafter considered as the length seal part 13b) provided along the moving direction of the rotary door 6, respectively. The width seal part 13a has abbreviated L shape shape, one of them is joined to the connecting plate 6c, and other neighborhoods are joined to the disk part 6a. The end of the portion joined to the disk part 6a is joined to the lobe 6f. On the other hand, the length seal part 13b is formed so that the ends which become the ring part 6b side of the width seal part 13a may be connected, and it is provided along the moving direction of the rotary door 6.

[0019]Thus, by forming the width seal part 13a and the length seal part 13b, If it will be in the state where the opening 8a is blockaded when the rotary door 6 is allocated inside the case 1, the circumference of the opening 8a will be in the state where it was surrounded by the height 6f, the width seal part 13a, and the length seal part 13b. Then, the operation of this embodiment is described.

[0020]It is inhaled from the admission port 3 and the air which passed the evaporator and the heater core 4 is led to the inside of the rotary door 6. The air led to the inside of the rotary door 6 flows into each openings 7a, 8a, 9a, and 10a of the case 1 according to the rotating position of the rotary door 6, and is sent to each ducts 7, 8, 9, and 10. Hereafter, the relation between the rotating position of the door rotary 6 and blow-off mode is explained using drawing 6 - drawing 8. Drawing 6 - drawing 8 show the figure at the time of a face mode, a foot mode, and a defroster mode here, and (b of (a) of each figure) of the C-C arrowed cross-section figure of drawing 2 and each figure is a D-D arrowed cross-section figure of drawing 2.

[0021]First, the face mode which blows off an air conditioning wind from the center face duct 9 and the side face duct 7 is shown in drawing 6. At the time of a face mode, as shown in drawing 6 (a), 6 d of connecting plates of the door rotary 6 are in the defroster opening 10a and the position which counters, and the opening 10a is in the state where it was blockaded, by 6 d of connecting plates.

On the other hand, as shown in drawing 6 (b), the connecting plate 6c of the door rotary 6 is in the foot opening part 8a and the position which counters, and while the opening 8a is in the state where it was blockaded, by the connecting plate 6c, the opening of the center face opening 7a is carried out in the state almost near full admission.

[0022]Next, while blowing off an air conditioning wind from the side face duct 7 and the foot duct 8 to drawing 7, the foot mode which blows off the wind of certain quantity also from the defroster duct 10 is shown in it. At the time of a foot mode, as shown in drawing 7 (a), 6 d of connecting plates are in the position of the center face opening 9a and the defroster opening 10a which counters with all mostly, and the opening 9a and the defroster opening 10a are in the state where it was blockaded, by 6 d of connecting plates. On the other hand, as shown in drawing 7 (b), both the side face opening 7a and the foot opening part 8a will be in an opened state.

[0023]Next, the defroster mode which blows off an air conditioning wind from the defroster duct 10 and the side face duct 7 is shown in drawing 8. At the time of a defroster mode, as shown in drawing 8 (a), 6 d of connecting plates are in the center face opening 9a and the position which counters, the opening 9a is blockaded by 6 d of connecting plates, and the defroster opening 10a is fully opened. On the other hand, as shown in drawing 8 (b), the connecting plate 6c is in the foot opening part 8a and the position which counters, and the foot opening part 8a will be in the state where it was blockaded, by the connecting plate 6c.

[0024]Although the graphic display was not carried out, When each above-mentioned connecting plates 6c and 6d become the mid-position of drawing 6 and drawing 7, it becomes a bilevel mode which blows off an air conditioning wind from the side face duct 7, the foot duct 8, and the center face duct 9, each connecting plates 6c and 6d — drawing 7 and drawing 8 -- the mid-position — it becomes the foot differential-gear mode which sometimes blows off an air conditioning wind from the foot duct 8 and the defroster duct 10.

[0025]Thus, each blow-off mode is changed by rotating the rotary door 6. According to blow-off mode, the opening 8a is blockaded by the connecting plate 6c, and the openings 9a and 10a are blockaded by 6 d of connecting plates. By the way, since the height 6f is set up by the disk part 6a of the rotary door and this height 6f has fitted loosely into the slot 1c, When the opening 8a is blockaded, the air which is going to flow into the opening 8a along the shaft orientations of the rotating shaft 6e from the inside of the rotary door 6 tends to pass through the gap of the height 6f and the slot 1c.

[0026]However, since this air is passed being crooked along the height 6f and the slot 1c, The draft resistance of the gap of the height 6f and the slot 1c becomes large, and the flow of the air which is going to flow into the opening 8a of the case 1 which should be blockaded along the shaft orientations of the rotating shaft 6e from the disk part 6a side can be interrupted substantially. Therefore, conventionally, the portion provided in the disk part 6a side among the length seal parts provided along the moving direction of the rotary door 6 can be lost, and the operating physical force needed when rotating the rotary door 6 can be decreased.

[0027]On the other hand, when the opening 8a is blockaded, the flow of the air which is going to flow from the connecting-plate 6d side among the flows of the air which is going to flow into the opening 8a along the moving direction of the rotary door 6 from the inside of the rotary door 6, While the length seal part 13b bends, it is interrupted by contacting the wall surface of the case 1. The flow of the air of which it is going to do 8a inflow along the moving direction of the rotary door 6 at an opening is interrupted by contacting the wall surface of the case 1, while the width seal part 13a bends.

[0028]When the opening 8a is blockaded, the circumference of the opening 8a so that it may be in the state where it was surrounded by the height 6f, the width seal part 13a, and the length seal part 13b, The height 6f, the width seal part 13a, and the length seal part 13b are formed, and can fully

maintain the sealing nature between the rotary door 6 and the wall surface of the case 1.
[A 2nd embodiment] It is good also as a structure in which the height which fits loosely into the slot which considered it as the shape on which two or more rotation sides which have a section of the approximate circle arc shape where the sizes of a path differ the shape of a rotary door were accumulated, and was formed in the end face of the both sides of each rotation side at the case was formed. The explanation is omitted while using the numerals same about the portion which has the same structure as a 1st embodiment hereafter.
[0029]As shown in drawing 9 and drawing 10, the rotary door 15, The two disk parts 15a which have a ring shaped part in a rim, and the two ring parts 15b with a larger path which have a tabular part (it is hereafter considered as the semidisc part 15c) of semicircular shapes in a rim than the disk part 15a, 15 d of connecting plates of four sheets (two of them hide and not shown [sheets] by drawing 4) which connect the above-mentioned disk part 15a and the ring part 15b, Integral moulding of the connecting plate 15e of one sheet which connects the above-mentioned ring parts 15b and 15b, the annular lobe 15f set up by the disk part 15a, and the annular lobe 15g set up by the semidisc part 15c is carried out by resin with the predetermined mold which is not illustrated, respectively. 15 h (one of them hides and not shown [**]) of two cylindrical rotating shafts projected to the disk part 15a are formed in the central part of the disk parts 15a and 15a.
[0030]The rotary door 15 is arranged inside the case 1 so that, as for this rotary door 15, the part between the ring shaped part of the disk part 15a and the ring part 15b may counter with the above-mentioned ducts 7 and 8 and the part between the ring parts 15b and 15b may counter with the above-mentioned ducts 9 and 10. The part between the ring shaped part of the disk part 15a and the ring part 15b and the part between the ring parts 15b and 15b serve as a rotation side of the rotary door 15, and, as for the section, both parts serve as approximate circle arc shape. However, the size of the path of the section of the rotation side constituted by the part between the ring parts 15b and 15b is larger than the size of the path of the section of the rotation side constituted by the part between the ring shaped part of 15a, and the ring part 15b.
[0031]The disk part 15a and the semidisc part 15c, It is a both-ends side of the rotation side constituted by the part between the ring shaped part of the disk part 15a, and the ring part 15b, and the semidisc part 15c and the semidisc part 15c serve as a both-ends side of the rotation side constituted by the part between the ring parts 15b and 15b. The portion in which 15 d of connecting plates are not provided among the parts between the ring shaped part of the disk part 15a, and the ring part 15b, And the portion in which the connecting plate 15e is not formed among the parts between the ring parts 15b and 15b is in the state where the inside and the exterior of the rotary door 15 were open for free passage, and serves as an opening of the rotary door in a claim.
[0032]The slot 1c which is a slot was formed in the lobe 15f of the rotary door 15, and the wall surface of the case 1 which counters, the lobe 15f has fitted in loosely, and the shaped bag is accomplished. On the other hand, 1 d of slots which are a slot were formed in the wall surface of the lobe 15g and the case 1 which counters, the lobe 15g has fitted in loosely, and the shaped bag is accomplished. Thus, by making it fit loosely into the slots 1c and 1d which formed the lobes 15f and 15g in the disk part 15a and the semidisc part 15c, respectively, and were formed in the case 1, As a 1st embodiment was described, the flow of the air which is going to flow into the opening 8a from the inside of the rotary door 15 along the moving direction of the rotary door 15 can be interrupted.
[0033]The sealing member 16 provided over the disk part 15a and 15 d of connecting plates, and the sealing member 17 provided in the connecting plate 15e, It consists of elastic bodies (specifically rubber) like the sealing members 11 and 12 in a 1st embodiment, The flexible parts 13 and 14 in a 1st embodiment and the flexible parts 18 and 19 similarly extended to the connecting

plates 15d and 15e which pasted up self in the vertical direction (direction extended to the wall surface side of the case 1 which counters when the door rotary 15 is allocated in the case 1) are formed, respectively.

[0034]The flexible part 18 of the sealing member 16 provided in 15 d of connecting plates has crank shape, and each neighborhood is joined, respectively so that it may become an abbreviated perpendicular in the moving direction of the rotary door 15 at the disk part 15a, 15 d of connecting plates, and the semidisc part 15c. The end of the portion of the flexible part 18 by which the end of the portion of the flexible part 18 provided in the disk part 15a is provided in the height 15f at the disk part 15a is joined to the height 15g, respectively.

[0035]On the other hand, the flexible part 19 of the sealing member 17 provided in the connecting plate 15e has the shape shape of abbreviated KO, and each neighborhood is joined, respectively so that it may become the semidisc part 15c, the connecting plate 15e, and the semidisc part 15c with an abbreviated perpendicular in the moving direction of the rotary door 15. The end of the portion of the flexible part 19 provided in the semidisc part 15c is joined to the height 15g, respectively.

[0036]If the rotary door 15 rotates in order to change blow-off mode, the openings 9a and 10a will be opened [the opening 8a will be opened and closed by 15 d of connecting plates, and] and closed by the connecting plate 15e, respectively. A blockade of the opening 8a will interrupt the flow of the air which is going to flow into the opening 8a along the moving direction of the rotary door 15 by contacting, while the flexible part 18 bends around the opening 8a at the wall surface of the case 1.

[0037]If the openings 9a and 10a are blockaded as stated above, it will be in the state where the seal was carried out by the shaped bag and the sealing member 16, between the wall surface of the case 1 and the rotary door 15 used as the circumference of the openings 9a and 10a. By considering it as the shape which connected the disk part 15a which differs the rotary door 15 in the size of a path, and the ring part 15b by the connecting plates 15d and 15e especially in this embodiment, In the air-conditioner with which two or more openings 7a, 8a, 9a, and 10a are formed in the shaft orientations of 15 h of rotating shafts at the case 1, a shaped bag can be provided in the both ends of each rotation side. Therefore, the inside of the flow of the air which is going to flow into the opening 8a from the inside of the rotary door 15 along the moving direction of the rotary door 15, Not only the flow of the air which is going to flow into the opening 8a from the disk part 15a side but the flow of the air which is going to flow into the opening 8a from the semidisc part 15a side can be interrupted. Therefore, all the provided width seal parts can be lost conventionally, and the operating physical force which is needed when rotating the rotary door 15 can be reduced further.

[A 3rd embodiment] The height set up by the disk part in a rotary door can be eliminated, and the effect almost same also as a structure where the end of the portion joined to the disk part of a width seal part was joined to the rotating shaft of the rotary door as a 1st embodiment can be acquired. The explanation is omitted while using the numerals same about the portion which has the same structure as a 1st embodiment.

[0038]As shown in drawing 11 or 12, the sealing member 11 in a 1st embodiment and the sealing member 20 which consists of same construction material are joined to the disk part 6a and the connecting plate 6c of the rotary door 6. The flexible part 21 to which the sealing member 20 is extended to the connecting plate 6c perpendicularly (direction extended to the wall surface side of the case 1 which counters when the door rotary 6 is allocated in the case 1) is formed. The flexible part 21 is provided with the following.

The length seal part 21b provided in the shaft orientations of the rotating shaft 6e of the rotary door 6.

The width seal part 21a provided along the moving direction of the rotary door 6.

[0039]The width seal part 21a has abbreviated L shape shape, one side is joined to the disk part 6a, and other neighborhoods are joined to the connecting plate 6c, respectively. The end of the portion provided in the disk part 6a among the width seal parts 21a is joined to the rotating shaft 6e of the rotary door 6. On the other hand, the length seal part 21b is formed so that the ends of the portion provided in the connecting plate 6c of the width seal part 21a may be connected.
[0040]If the rotary door 6 is allocated inside the case 1, when the opening 8 is blockaded, the circumference of the opening 8 will be in the state where it was surrounded by the width seal part 21a which contacts the wall surface of a case, and the length seal part 21b, bending. Therefore, the inside of the rotary door 6 can be passed, the air which is going to flow into the opening 8 can be interrupted by the width seal part 21a and the length seal part 21b, and the seal of between a rotary door and the wall surfaces of a case can be carried out.
[0041]Since the portion provided in the disk part 6a of the width seal part 21a is provided in the moving direction of the rotary door at the abbreviated perpendicular, the direction which bends when the rotary door 6 rotates is only one way. Therefore, the operating physical force needed when rotating the rotary door 6 can be reduced. Since the same effect as a 1st embodiment can be acquired like a 1st embodiment even if a lobe is not formed in a disk part and it does not form a slot in a case, respectively, a rotary door and a case can be made into a briefer structure.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

TECHNICAL FIELD

[Field of the Invention]This invention relates to the air-conditioner for vehicles which adjusts the air relieving volume from the opening of a case by rotating the door rotary of a cylindrical shape focusing on a rotating shaft so that a rotation side may meet the opening formed in the case.

[Translation done.]

PRIOR ART

[Description of the Prior Art]In the air-conditioner which rotates the above door rotaries and adjusts the relieving volume from the opening of a case. Usually, the sealing member which consists of elastic members has adhered to the rotation side of a rotary door, and the wind leakage from between a rotary door and cases is prevented by making this sealing member contact the verge-of-opening part of a case.

[0003]Thus, about the air-conditioner which provided the sealing member in the rotary door, this invention persons applied as Japanese Patent Application No. No. 193385 [seven to] previously. In Japanese Patent Application No. No. 193385 [seven to], the rotary door 50 as shown in a figure as a rotary door allotted to an air-conditioner is mentioned. The sealing member 51 which consists of rubbers has adhered to the rotation side 50a of the rotary door 50. The sealing member 51 is mostly extended to the rotation side 50a of the rotary door 50 perpendicularly (direction which goes to the wall surface of a case when the rotary door 50 is allocated by the case (not shown)), and has the flexible part 52 which has flexibility.

[0004]This flexible part 52 is formed in the approximately rectangle, and has a portion (it is hereafter considered as the width seal part 52a) provided in the shaft orientations of the rotating shaft 50b, and a portion (it is hereafter considered as the length seal part 52b) provided along the moving direction of the rotary door 50. The rotary door 50 is allocated in the case so that the tip of the flexible part 52 may contact the wall surface of a case and it may be in the state where it bent. By making the wall surface of a case contact, where the flexible part 52 is sagged, the seal of between the rotary door 50 and the wall surface of a case is carried out.

[Translation done.]

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention]However, when this invention persons inquired wholeheartedly, it became clear that there is a problem it is described below that is a rotary door as shown in said Japanese Patent Application No. No. 193385 [seven to]. Since the width seal part 52a is formed among the flexible parts 52 almost in parallel with the rotating shaft 50b of the rotary door 50, the tip of the width seal part 52a bends in one way at the time of rotation of the rotary door 50. Therefore, an operating physical force required at the time of rotation of the rotary door 50 is comparatively small. On the other hand, since the length seal part 52b is formed along the moving direction of the rotary door 50, the direction by which the tip of the length seal part 52b is bent at the time of rotation of the rotary door 50 will be irregular to the moving direction of the rotary door 50 at right and left. Therefore, while the big operating physical force at the time of rotation of the rotary door 50 is needed, there is a problem that sealing nature will fall.
[0006]Then, in the air-conditioner which carries out the seal of between a rotary door and cases by making the wall surface of a case contact, this invention being made in light of the above-mentioned problems, and sagging the tip of a flexible part, It aims at the operating physical force of a rotary door making it decrease, securing sealing nature.

[Translation done.]

MEANS

[Means for Solving the Problem]Since a height (6f) formed in the end face (6a) has structure which fits loosely into a slot (1c) formed in a case (1) according to the invention according to claim 1 in order to attain the above-mentioned purpose, Air which is going to flow into an opening (8, 9, 10) of a case which should be blockaded along shaft orientations of a rotating shaft (6e) tends to pass through a gap of a height and a slot. However, since this air is passed being crooked along a height and a slot, a draft resistance of a gap of a height and a slot becomes large, and a flow of air which is going to flow into an opening of a case which should be blockaded along shaft orientations of a rotating shaft can be interrupted substantially. Therefore, a flow of air which is going to flow into an opening of a case which should be blockaded along shaft orientations of a rotating shaft interrupted by flexible part (length seal part in a paragraph of conventional technology (52b)) provided along a moving direction of a rotary door (6) can be interrupted conventionally. Therefore, the length of a flexible part (13b) provided along a moving direction which could lose a portion provided in the end face side among flexible parts provided along a moving direction of a rotary door, and caused operating-physical-force increase of a rotary door can be shortened. An operating physical force which is needed when rotating a rotary door can be reduced. Since a height has fitted loosely into a slot, an operating physical force which is needed when rotating a rotary door is not increased.
[0008]An end of a flexible part (13a) is joined to a height, and since the circumference of an opening of a case which should be blockaded by a flexible part (13) and height is surrounded, sealing nature between a rotary door and a wall surface of a case can fully be maintained. By considering it as shape where several rotation sides where sizes of a path differ shape of a rotary door (15) were accumulated according to the invention of claim 2, a both-ends side (15a.) of each rotation side of a rotary door allotted to an inside of a case (1) where two or more openings (8, 9, 10) are formed in shaft orientations of a rotating shaft (15h) at a wall surface A flow of air which is going to flow into an opening of a case which should be blockaded at the both-ends side of each rotation side along shaft orientations of a rotating shaft can be interrupted by forming a height (15f, 15g) in 15c, and making it fit loosely into a slot of a case. Therefore, conventionally, all length seal parts (52b) provided in a moving direction of a rotary door can be lost, and an operating physical force which is needed when rotating a rotary door can be reduced further.
[0009]According to the invention of claim 3, it can interrupt by a flexible part (21a) in which a flow of air which is going to flow into an opening (8, 9, 10) of a case (1) which should be blockaded from the end face (6a) side along shaft orientations of a rotating shaft (6e) of a rotary door (6) was provided in the end face. Since a flexible part provided in this end face is provided so that it may become an abbreviated perpendicular in a moving direction of a rotary door, a direction which bends when a rotary door rotates turns into only one way. Therefore, an operating physical force which is needed when rotating a rotary door can be reduced, and the same effect as claim 1 can be

acquired. Even if it does not have the structure into which a height of a rotary door and a slot of a case fitted loosely, the same effect as claim 1 can be acquired, and compared with an invention of claim 1, it can be considered as a briefer structure.

[0010]a portion by which according to the invention of claim 4 it is provided in the end face (6a) of a flexible part (13), and an end is joined to a height (6f) -- a moving direction of a rotary door (6) -- abbreviated -- since it is provided so that it may become vertical, a direction by which this portion is bent at the time of rotation of a rotary door turns into only one way. Therefore, while fully being able to maintain sealing nature between the end face of a rotary door, and a wall surface of a case (1), an operating physical force needed when a rotary door makes it rotate can be reduced.

[0011]

[Embodiment of the Invention]Next, this invention is explained using drawing 1 thru/or drawing 9 about the 1st example applied as an air-conditioner for vehicles. The fan 2 is allocated in the air upstream part of the case 1 where it has an air duct inside. This fan 2 is driven by the driving means which is not illustrated. The admission port 3 for inhaling air is formed in the upstream (drawing 1 space near side) part rather than the fan 2 of the case 1. And the cooler unit which stored the compressor which is not illustrated, the condenser, and the evaporator which constitutes a well-known refrigerating cycle with a decompressing means is connected to this admission port 3.

[0012]The heater core 4 which heats the air to pass is formed in the air downstream part rather than the fan 2 in in the case 1. It rotates in the air upstream part of the heater core 4 focusing on the shaft 5a, and the air mix door 5 which adjusts the quantity of the air which passes the heater core 4 is formed in it. In the air downstream part of the heater core 4 of the case 1. The section approximate circle-shaped portions 1a and 1a project, respectively, and are formed in the drawing 1 space near side and the back side, The rotating shaft 6e of the door rotary 6 later mentioned to the lobe 1b formed in this portion 1a fits in loosely, and the door rotary 6 is supported to the case 1 by being supported enabling free rotation among the above 1a and 1a, enabling free rotation.

[0013]While two or more ducts 7-10 stated to the shaft orientations of the rotary door 6 allotted to this portion 1a below are connected, the openings 7a-10a used as the air lowest style side part of these ducts 7-10 are formed in this portion 1a. The side face ducts 7 and 7 which lead air conditioning to the side-glasses side part or side glasses of the upper half of the body of a driver's seat crew member and a passenger seat crew member, and the foot ducts 8 and 8 which lead air conditioning to a driver's seat crew member step and a passenger seat crew member step are connected to the above-mentioned portion 1a.

[0014]The center face duct 9 which leads air conditioning to the upper-half-of-the-body center section of a driver's seat crew member and the passenger seat crew member, and the defroster duct 10 which leads air conditioning to a windshield inner surface are formed in the air downstream end of the case 1 (refer to drawing 3). And the air, as for, the exhaust air mix was carried out by the above-mentioned air mix door 5, As it is led in the door rotary 6 and each openings 7a-10a (refer to drawing 6 - drawing 8) which this door rotary 6 mentions later are met, it rotates focusing on the above-mentioned rotating shaft 6e, and the air relieving volume from each above-mentioned ducts 7-10 is adjusted by the stopped position.

[0015]Next, the shape of the above-mentioned door rotary 6 is explained. The two disk parts 6a (end face in a claim) to which the door rotary 6 has a ring shaped part in a rim as shown in drawing 1, The connecting plate 6c of four sheets (two of them hide and not shown [sheets] by drawing 4) which connects the two ring parts 6b formed in ring shape, and the above-mentioned disk parts 6a and the ring parts 6b, 6 d of connecting plates of one sheet which connect the above-mentioned ring parts 6b and 6b, and the annular lobe 6f set up by the disk part 6a so that it may be extended towards the wall surface of the case 1, when the rotary door 6 is allocated by the case 1,

respectively, Integral moulding is carried out by resin by the predetermined mold which is not illustrated, and it has the shape of a section approximate circle arc-shaped cylindrical shape as a whole with it. The two cylindrical rotating shafts 6e (one of them hides and not shown [**]) projected to the disk part 6a are formed in the central part of the disk parts 6a and 6a.

[0016]If the door rotary 6 rotates focusing on the rotating shaft 6e, the rotary door 6 will be arranged inside the case 1 so that the part between the ring shaped part of the disk part 6a and the ring part 6b may counter with the above-mentioned ducts 7 and 8 and the part between the ring parts 6b and 6b may counter with the above-mentioned ducts 9 and 10. The portion in which the connecting plate 6c is not formed among the parts between the ring shaped part of the disk part 6a, and the ring part 6b, And the portion in which 6 d of connecting plates are not provided among the parts between the ring parts 6b and 6b is in the state where the inside and the exterior of the rotary door were open for free passage, and serves as an opening of the rotary door in a claim.

[0017]The slot 1c which is a slot is formed in the lobe 6f of the rotary door 6, and the wall surface of the case 1 which counters, the lobe 6f of the rotary door 6 fitted in loosely, and the shaped bag is accomplished. By the way, the sealing members (specifically rubber) 11 and 12 which consist of elastic bodies have adhered to the disk part 6a and each each connecting plates [6c and 6d] upper surface (it specifically pastes up with adhesives). The flexible parts 12 and 13 extended in the direction (direction extended to the wall surface side of the case 1 which counters when the door rotary 6 is allocated in the case 1) which becomes vertical to the connecting plates 6c and 6d which pasted up self are formed in these sealing members 11 and 12, respectively. These flexible parts 12 and 13 to the width in a perpendicular direction The connecting plate 6c, The width in a direction (direction which the door rotary 6 rotates after allocating the door rotary 6 in the case 1) level to a 6-d field is short enough, and if the door rotary 6 is allocated in the case 1, it will contact in the state (the drawing 4 inner substance line shows) where it bent on the wall surface of the case 1.

[0018]The flexible part 12 provided in the disk part 6a and the connecting plate 6c has a portion (it is hereafter considered as the width seal part 13a) provided in the moving direction of the rotary door 6 at an abbreviated perpendicular, and a portion (it is hereafter considered as the length seal part 13b) provided along the moving direction of the rotary door 6, respectively. The width seal part 13a has abbreviated L shape shape, one of them is joined to the connecting plate 6c, and other neighborhoods are joined to the disk part 6a. The end of the portion joined to the disk part 6a is joined to the lobe 6f. On the other hand, the length seal part 13b is formed so that the ends which become the ring part 6b side of the width seal part 13a may be connected, and it is provided along the moving direction of the rotary door 6.

[0019]Thus, by forming the width seal part 13a and the length seal part 13b, If it will be in the state where the opening 8a is blockaded when the rotary door 6 is allocated inside the case 1, the circumference of the opening 8a will be in the state where it was surrounded by the height 6f, the width seal part 13a, and the length seal part 13b. Then, the operation of this embodiment is described.

[0020]It is inhaled from the admission port 3 and the air which passed the evaporator and the heater core 4 is led to the inside of the rotary door 6. The air led to the inside of the rotary door 6 flows into each openings 7a, 8a, 9a, and 10a of the case 1 according to the rotating position of the rotary door 6, and is sent to each ducts 7, 8, 9, and 10. Hereafter, the relation between the rotating position of the door rotary 6 and blow-off mode is explained using drawing 6 - drawing 8. Drawing 6 - drawing 8 show the figure at the time of a face mode, a foot mode, and a defroster mode here, and (b of (a) of each figure) of the C-C arrowed cross-section figure of drawing 2 and each figure is a D-D arrowed cross-section figure of drawing 2.

[0021]First, the face mode which blows off an air conditioning wind from the center face duct 9 and the side face duct 7 is shown in drawing 6. At the time of a face mode, as shown in drawing 6 (a), 6 d of connecting plates of the door rotary 6 are in the defroster opening 10a and the position which counters, and the opening 10a is in the state where it was blockaded, by 6 d of connecting plates. On the other hand, as shown in drawing 6 (b), the connecting plate 6c of the door rotary 6 is in the foot opening part 8a and the position which counters, and while the opening 8a is in the state where it was blockaded, by the connecting plate 6c, the opening of the center face opening 7a is carried out in the state almost near full admission.

[0022]Next, while blowing off an air conditioning wind from the side face duct 7 and the foot duct 8 to drawing 7, the foot mode which blows off the wind of certain quantity also from the defroster duct 10 is shown in it. At the time of a foot mode, as shown in drawing 7 (a), 6 d of connecting plates are in the position of the center face opening 9a and the defroster opening 10a which counters with all mostly, and the opening 9a and the defroster opening 10a are in the state where it was blockaded, by 6 d of connecting plates. On the other hand, as shown in drawing 7 (b), both the side face opening 7a and the foot opening part 8a will be in an opened state.

[0023]Next, the defroster mode which blows off an air conditioning wind from the defroster duct 10 and the side face duct 7 is shown in drawing 8. At the time of a defroster mode, as shown in drawing 8 (a), 6 d of connecting plates are in the center face opening 9a and the position which counters, the opening 9a is blockaded by 6 d of connecting plates, and the defroster opening 10a is fully opened. On the other hand, as shown in drawing 8 (b), the connecting plate 6c is in the foot opening part 8a and the position which counters, and the foot opening part 8a will be in the state where it was blockaded, by the connecting plate 6c.

[0024]Although the graphic display was not carried out, When each above-mentioned connecting plates 6c and 6d become the mid-position of drawing 6 and drawing 7, it becomes a bilevel mode which blows off an air conditioning wind from the side face duct 7, the foot duct 8, and the center face duct 9, each connecting plates 6c and 6d -- drawing 7 and drawing 8 --- the mid-position -- it becomes the foot differential-gear mode which sometimes blows off an air conditioning wind from the foot duct 8 and the defroster duct 10.

[0025]Thus, each blow-off mode is changed by rotating the rotary door 6. According to blow-off mode, the opening 8a is blockaded by the connecting plate 6c, and the openings 9a and 10a are blockaded by 6 d of connecting plates. By the way, since the height 6f is set up by the disk part 6a of the rotary door and this height 6f has fitted loosely into the slot 1c, When the opening 8a is blockaded, the air which is going to flow into the opening 8a along the shaft orientations of the rotating shaft 6e from the inside of the rotary door 6 tends to pass through the gap of the height 6f and the slot 1c.

[0026]However, since this air is passed being crooked along the height 6f and the slot 1c, The draft resistance of the gap of the height 6f and the slot 1c becomes large, and the flow of the air which is going to flow into the opening 8a of the case 1 which should be blockaded along the shaft orientations of the rotating shaft 6e from the disk part 6a side can be interrupted substantially. Therefore, conventionally, the portion provided in the disk part 6a side among the length seal parts provided along the moving direction of the rotary door 6 can be lost, and the operating physical force needed when rotating the rotary door 6 can be decreased.

[0027]On the other hand, when the opening 8a is blockaded, the flow of the air which is going to flow from the connecting-plate 6d side among the flows of the air which is going to flow into the opening 8a along the moving direction of the rotary door 6 from the inside of the rotary door 6, While the length seal part 13b bends, it is interrupted by contacting the wall surface of the case 1. The flow of the air of which it is going to do 8a inflow along the moving direction of the rotary door 6 at an opening is interrupted by contacting the wall surface of the case 1, while the width seal part

13a bends.

[0028]When the opening 8a is blockaded, the circumference of the opening 8a so that it may be in the state where it was surrounded by the height 6f, the width seal part 13a, and the length seal part 13b, The height 6f, the width seal part 13a, and the length seal part 13b are formed, and can fully maintain the sealing nature between the rotary door 6 and the wall surface of the case 1.

[A 2nd embodiment] It is good also as a structure in which the height which fits loosely into the slot which considered it as the shape on which two or more rotation sides which have a section of the approximate circle arc shape where the sizes of a path differ the shape of a rotary door were accumulated, and was formed in the end face of the both sides of each rotation side at the case was formed. The explanation is omitted while using the numerals same about the portion which has the same structure as a 1st embodiment hereafter.

[0029]As shown in drawing 9 and drawing 10, the rotary door 15, The two disk parts 15a which have a ring shaped part in a rim, and the two ring parts 15b with a larger path which have a tabular part (it is hereafter considered as the semidisc part 15c) of semicircular shapes in a rim than the disk part 15a, 15 d of connecting plates of four sheets (two of them hide and not shown [sheets] by drawing 4) which connect the above-mentioned disk part 15a and the ring part 15b, Integral moulding of the connecting plate 15e of one sheet which connects the above-mentioned ring parts 15b and 15b, the annular lobe 15f set up by the disk part 15a, and the annular lobe 15g set up by the semidisc part 15c is carried out by resin with the predetermined mold which is not illustrated, respectively. 15 h (one of them hides and not shown [**]) of two cylindrical rotating shafts projected to the disk part 15a are formed in the central part of the disk parts 15a and 15a.

[0030]The rotary door 15 is arranged inside the case 1 so that, as for this rotary door 15, the part between the ring shaped part of the disk part 15a and the ring part 15b may counter with the above-mentioned ducts 7 and 8 and the part between the ring parts 15b and 15b may counter with the above-mentioned ducts 9 and 10. The part between the ring shaped part of the disk part 15a and the ring part 15b and the part between the ring parts 15b and 15b serve as a rotation side of the rotary door 15, and, as for the section, both parts serve as approximate circle arc shape. However, the size of the path of the section of the rotation side constituted by the part between the ring parts 15b and 15b is larger than the size of the path of the section of the rotation side constituted by the part between the ring shaped part of 15a, and the ring part 15b.

[0031]The disk part 15a and the semidisc part 15c, It is a both-ends side of the rotation side constituted by the part between the ring shaped part of the disk part 15a, and the ring part 15b, and the semidisc part 15c and the semidisc part 15c serve as a both-ends side of the rotation side constituted by the part between the ring parts 15b and 15b. The portion in which 15 d of connecting plates are not provided among the parts between the ring shaped part of the disk part 15a, and the ring part 15b, And the portion in which the connecting plate 15e is not formed among the parts between the ring parts 15b and 15b is in the state where the inside and the exterior of the rotary door 15 were open for free passage, and serves as an opening of the rotary door in a claim.

[0032]The slot 1c which is a slot was formed in the lobe 15f of the rotary door 15, and the wall surface of the case 1 which counters, the lobe 15f has fitted in loosely, and the shaped bag is accomplished. On the other hand, 1 d of slots which are a slot were formed in the wall surface of the lobe 15g and the case 1 which counters, the lobe 15g has fitted in loosely, and the shaped bag is accomplished. Thus, by making it fit loosely into the slots 1c and 1d which formed the lobes 15f and 15g in the disk part 15a and the semidisc part 15c, respectively, and were formed in the case 1, As a 1st embodiment was described, the flow of the air which is going to flow into the opening 8a from the inside of the rotary door 15 along the moving direction of the rotary door 15 can be interrupted.

[0033]The sealing member 16 provided over the disk part 15a and 15 d of connecting plates, and the sealing member 17 provided in the connecting plate 15e, It consists of elastic bodies (specifically rubber) like the sealing members 11 and 12 in a 1st embodiment, The flexible parts 13 and 14 in a 1st embodiment and the flexible parts 18 and 19 similarly extended to the connecting plates 15d and 15e which pasted up self in the vertical direction (direction extended to the wall surface side of the case 1 which counters when the door rotary 15 is allocated in the case 1) are formed, respectively.

[0034]The flexible part 18 of the sealing member 16 provided in 15 d of connecting plates has crank shape, and each neighborhood is joined, respectively so that it may become an abbreviated perpendicular in the moving direction of the rotary door 15 at the disk part 15a, 15 d of connecting plates, and the semidisc part 15c. The end of the portion of the flexible part 18 by which the end of the portion of the flexible part 18 provided in the disk part 15a is provided in the height 15f at the disk part 15a is joined to the height 15g, respectively.

[0035]On the other hand, the flexible part 19 of the sealing member 17 provided in the connecting plate 15e has the shape shape of abbreviated KO, and each neighborhood is joined, respectively so that it may become the semidisc part 15c, the connecting plate 15e, and the semidisc part 15c with an abbreviated perpendicular in the moving direction of the rotary door 15. The end of the portion of the flexible part 19 provided in the semidisc part 15c is joined to the height 15g, respectively.

[0036]If the rotary door 15 rotates in order to change blow-off mode, the openings 9a and 10a will be opened [the opening 8a will be opened and closed by 15 d of connecting plates, and] and closed by the connecting plate 15e, respectively. A blockade of the opening 8a will interrupt the flow of the air which is going to flow into the opening 8a along the moving direction of the rotary door 15 by contacting, while the flexible part 18 bends around the opening 8a at the wall surface of the case 1.

[0037]If the openings 9a and 10a are blockaded as stated above, it will be in the state where the seal was carried out by the shaped bag and the sealing member 16, between the wall surface of the case 1 and the rotary door 15 used as the circumference of the openings 9a and 10a. By considering it as the shape which connected the disk part 15a which differs the rotary door 15 in the size of a path, and the ring part 15b by the connecting plates 15d and 15e especially in this embodiment, In the air-conditioner with which two or more openings 7a, 8a, 9a, and 10a are formed in the shaft orientations of 15 h of rotating shafts at the case 1, a shaped bag can be provided in the both ends of each rotation side. Therefore, the inside of the flow of the air which is going to flow into the opening 8a from the inside of the rotary door 15 along the moving direction of the rotary door 15, Not only the flow of the air which is going to flow into the opening 8a from the disk part 15a side but the flow of the air which is going to flow into the opening 8a from the semidisc part 15a side can be interrupted. Therefore, all the provided width seal parts can be lost conventionally, and the operating physical force which is needed when rotating the rotary door 15 can be reduced further.

[A 3rd embodiment] The height set up by the disk part in a rotary door can be eliminated, and the effect almost same also as a structure where the end of the portion joined to the disk part of a width seal part was joined to the rotating shaft of the rotary door as a 1st embodiment can be acquired. The explanation is omitted while using the numerals same about the portion which has the same structure as a 1st embodiment.

[0038]As shown in drawing 11 or 12, the sealing member 11 in a 1st embodiment and the sealing member 20 which consists of same construction material are joined to the disk part 6a and the connecting plate 6c of the rotary door 6. The flexible part 21 to which the sealing member 20 is extended to the connecting plate 6c perpendicularly (direction extended to the wall surface side of

the case 1 which counters when the door rotary 6 is allocated in the case 1) is formed. The flexible part 21 is provided with the following.
The length seal part 21b provided in the shaft orientations of the rotating shaft 6e of the rotary door 6.
The width seal part 21a provided along the moving direction of the rotary door 6.

[0039]The width seal part 21a has abbreviated L shape shape, one side is joined to the disk part 6a, and other neighborhoods are joined to the connecting plate 6c, respectively. The end of the portion provided in the disk part 6a among the width seal parts 21a is joined to the rotating shaft 6e of the rotary door 6. On the other hand, the length seal part 21b is formed so that the ends of the portion provided in the connecting plate 6c of the width seal part 21a may be connected.
[0040]If the rotary door 6 is allocated inside the case 1, when the opening 8 is blockaded, the circumference of the opening 8 will be in the state where it was surrounded by the width seal part 21a which contacts the wall surface of a case, and the length seal part 21b, bending. Therefore, the inside of the rotary door 6 can be passed, the air which is going to flow into the opening 8 can be interrupted by the width seal part 21a and the length seal part 21b, and the seal of between a rotary door and the wall surfaces of a case can be carried out.
[0041]Since the portion provided in the disk part 6a of the width seal part 21a is provided in the moving direction of the rotary door at the abbreviated perpendicular, the direction which bends when the rotary door 6 rotates is only one way. Therefore, the operating physical force needed when rotating the rotary door 6 can be reduced. Since the same effect as a 1st embodiment can be acquired like a 1st embodiment even if a lobe is not formed in a disk part and it does not form a slot in a case, respectively, a rotary door and a case can be made into a briefer structure.

[Translation done.]

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DESCRIPTION OF DRAWINGS

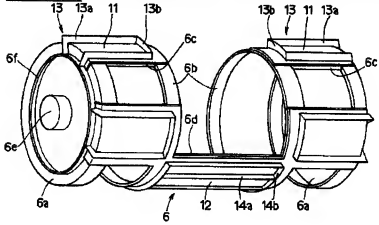
[Brief Description of the Drawings]
[Drawing 1]It is a perspective view showing the entire configuration of the rotary door in a 1st embodiment of this invention.
[Drawing 2]It is a front view showing the entire configuration of an air-conditioner.
[Drawing 3]It is B view figure of drawing 2.
[Drawing 4]It is an enlarged drawing showing the state of a sealing member.
[Drawing 5]It is a partial enlarged drawing of the sectional view of the rotary door in a field vertical to a disk surface.
[Drawing 6]It is a figure showing the opening which becomes the lowest style side of each outlet at the time of a face mode, and (a) shows before long the state of an opening where (b) becomes the lowest style side of a foot outlet about the state of the opening which becomes the lowest style side of a center face outlet and a defroster outlet, respectively.
[Drawing 7]It is a figure showing the opening which becomes the lowest style side of each outlet at the time of a foot mode, and (a) shows before long the state of an opening where (b) becomes the lowest style side of a foot outlet about the state of the opening which becomes the lowest style side of a center face outlet and a defroster outlet, respectively.
[Drawing 8]It is a figure showing the opening which becomes the lowest style side of each outlet at the time of a defroster mode, and (a) shows before long the state of an opening where (b) becomes the lowest style side of a foot outlet about the state of the opening which becomes the lowest style side of a center face outlet and a defroster outlet, respectively.
[Drawing 9]It is a perspective view showing the entire configuration of the rotary door in a 2nd embodiment.
[Drawing 10]It is a partial enlarged drawing of the sectional view in a field vertical to the disk surface of the rotary door in a 2nd embodiment.
[Drawing 11]It is a perspective view showing the entire configuration of the rotary door in a 3rd embodiment.
[Drawing 12]It is a partial enlarged drawing of the sectional view in a field vertical to the disk surface of the rotary door in a 3rd embodiment.
[Drawing 13]It is a perspective view showing the entire configuration of the rotary door in the former.
[Description of Notations]
1 Case
1c The slot which is a slot
6 Rotary door
6a The disk part which is the end face of the rotary door 6

6e Rotating shaft
6 f Height
7a Opening
8a Opening
9a Opening
10a Opening
11 Seal part
13 Flexible part
13a The width seal part which is a portion provided along the shaft orientations of the rotating shaft 6e of the flexible part 13

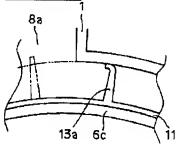
[Translation done.]

DRAWINGS

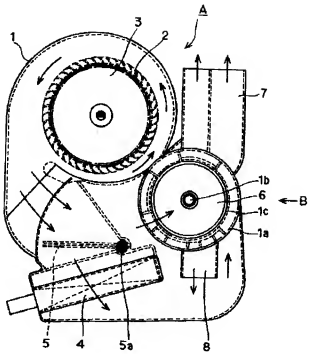
[Drawing 1]



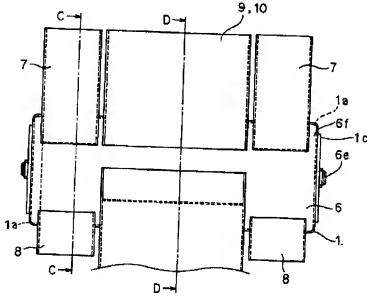
[Drawing 4]



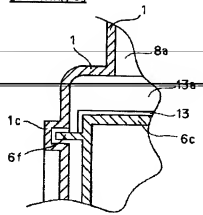
[Drawing 2]



[Drawing 3]

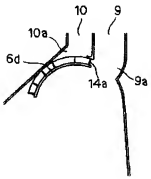


[Drawing 5]

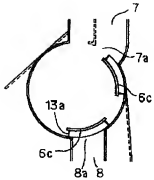


[Drawing 6]

(a)

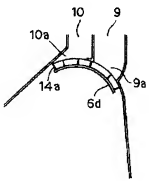


(b)



[Drawing 7]

(a)



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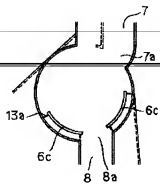
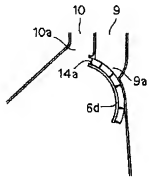
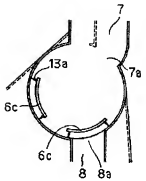


[Drawing 8]

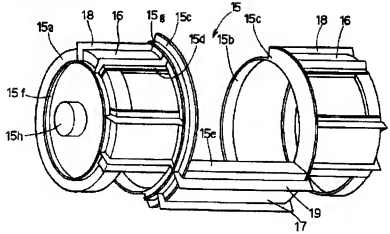
(a)



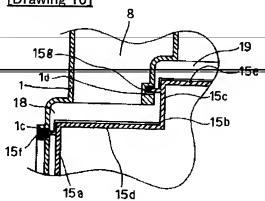
(b)



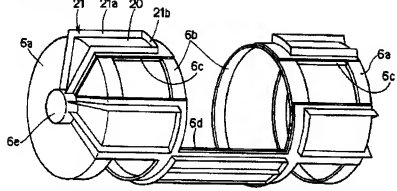
[Drawing 9]



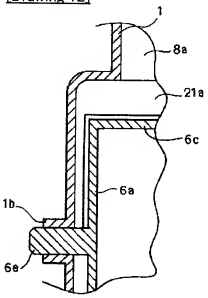
[Drawing 10]



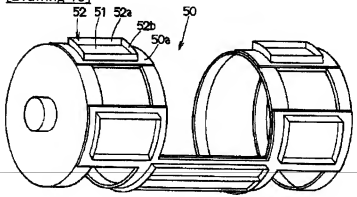
[Drawing 11]



[Drawing 12]



[Drawing 13]



[Translation done.]